CLAIMS

Claims 1-52 (Previously Cancelled)

53. (Previously Presented) A process for the production of a non-woven, comprising the following manufacturing steps; a) preparing at least one layer (T_1) of splittable multi-component polymer fibers and at least one layer of cellulose pulp fibers (T_3); b) hydro-entangling said at least one layer of splittable multi-component polymer fibers and said at least one layer of cellulous pulp fibers (T_3) such as to obtain a non-woven where the multi-component polymer fibers are split into mono-component micro-fibers entangling with one another, wherein the said at least one layer (T_1) of splittable multi-component polymer fibers has not been previously subjected to a bonding step.

54. (Previously Presented) The process according to claim 53, wherein step a) comprises: preparing at least one layer (T_1) of splittable multi-component polymer fibers; laying at least one layer of fibers of absorbent material (T_3) on said at least one layer (T_1), whereby the hydro-entangling step b) takes place such as to obtain a non-woven where the multi-component polymer fibers which are split into mono-component micro-fibers entangle both with one another and the fibers of the absorbent material.

55. (Previously Presented) The process according to claim 53, wherein step a) comprises: preparing at least one layer (T_1) of splittable multi-component polymer fibers; laying at least one layer of fibers of absorbent material (T_3) on said at least one layer (T_1); laying at least one further layer (T_2) of splittable multi-component polymer fibers on said at least one layer of fibers of absorbent material, whereby the hydro-entangling step b) takes place such as to obtain a multi-layer non-woven where the multi-component polymer fibers are split into individual mono-component micro-fibers entangling both with one another and the fibers of the absorbent material.

56. (Previously Presented) The process according to claim 53, wherein said step a) is made through separate extrusion of at least two polymers by a suitable spinneret

(5,7,11,15) below which said at least two polymer components are linked such as to form a single splittable multi-component fiber.

57. (Previously Presented) The process according to claim 56, wherein said splittable multi-component fiber is obtained by spinning and subsequently linking up to 16 continuous threads of different polymers.

58. (Previously Presented) The process according to claim 53, wherein said polymer fibers derive from at least two threads of a single polymer up to 16 threads of different polymers, be they homopolymers, copolymers or mixtures thereof.

59. (Previously Presented) The process according to claim 58, wherein said polymers are selected from polyesters, polyamides, polyolefins, polyurethane, polyester modified with additives, polypropylene, polyethylene, polypropylene terephthalate, polybutylene terephthalate.

60. (Previously Presented) The process for the production of a non-woven, comprising the following manufacturing steps; i) preparing at least one layer (T_1) of exploded polymer fibers; ii) hydro-entangling said at least one layer such as to obtain a non-woven where the polymer fibers are exploded into micro-fibers entangling with one another.

61. (Previously Presented) The process for the production of a non-woven according to claim 60, wherein step i) comprises: preparing at least one layer (T_1) of exploded polymer fibers; laying at least one layer of fibers of absorbent material (T_3) on said at least one layer (T_1), whereby the hydro-entangling step ii) takes place such as to obtain a non-woven fiber where the polymer fibers exploded into micro-fibers entangle both with one another and the fibers of the absorbent material.

62. (Previously Presented) The process according to claim 60, wherein step i) comprises: preparing at least one layer (T_1) of exploded polymer fibers; laying at least one layer of fibers of absorbent material (T_3) on said at least one layer (T.sub.1); laying at least one further

layer (T_2) of exploded polymer fibers on said at least one layer of fibers of absorbent material, whereby the hydro-entangling step ii) takes place such as to obtain a multi-layer non-woven in which the polymer fibers exploded into individual micro-fibers entangle both with one another and the fibers of the absorbent material.

63. (Previously Presented) The process according to claim 60, wherein the exploded polymer fibers are obtained through the passage of polymer fibers through a Laval nozzle.

64. (Previously Presented) The process according to claim 60, wherein the polymers of the exploded fibers are selected from natural or synthetic polymers.

65. (Previously Presented) The process according to claim 64, wherein the natural polymers are selected from cellulose, Lyocell and PLA, whilst the synthetic polymers are selected from polypropylene, polyethylene, polyamide and polyester.

66. (Previously Presented) The process according to claim 54, wherein said laying of absorbent material fibers takes place with cellulose pulp fibers.

67. (Previously Presented) The process according to claim 61, wherein said laying of absorbent material fibers takes place with cellulose pulp fibers.

68. (Previously Presented) The process according to claim 53, further comprising a drying step after the hydro-entangling step.

69. (Previously Presented) The process according to claim 60, further comprising a drying step after the hydro-entangling step.

70. (Previously Presented) The process according to claim 68, further comprising a step of winding the non-woven fabric onto a roller after said drying step.

71. (Previously Presented) The process according to claim 69, further comprising a step of winding the non-woven fabric onto a roller after said drying step.

72. (Previously Presented) The process according to claim 54, further comprising a pre-hydro-entangling step after said step of preparing at least one layer (T_1) of polymer fibers.

73. (Previously Presented) The process according to claim 61, further comprising a pre-hydro-entangling step after said step of preparing at least one layer (T_1) of polymer fibers.

74. (Previously Presented) The process according to claim 72, further comprising a drying step after said pre-hydro-entangling step.

75. (Previously Presented) The process according to claim 73, further comprising a drying step after said pre-hydro-entangling step.

76. (Previously Presented) The process according to claim 68, further comprising a dewatering step simultaneous or subsequent to said drying step.

77. (Previously Presented) The process according to claim 69, further comprising a dewatering step simultaneous or subsequent to said drying step.

78. (Previously Presented) The process according to claim 70, further comprising a thickening step before the winding step.

79. (Previously Presented) The process according to claim 71, further comprising a thickening step before the winding step.

80. (Previously Presented) The process according to claim 78, wherein said thickening step takes place through calendering or hydro-entangling.

81. (Previously Presented) The process according to claim 79, wherein said thickening step takes place through calendering or hydro-entangling.

82. (Previously Presented) The process according to claim 53, wherein air is sucked at a temperature equal to or lower than room temperature through said polymer fibers in order to cool and cure them.

83. (Previously Presented) The process according to claim 60, wherein air is sucked at a temperature equal to or lower than room temperature through said polymer fibers in order to cool and cure them.

84. (Previously Presented) The process according to claim 60, wherein said exploded fibers are humidified before being hydro-entangled.

85. (Previously Presented) The process according to claim 53, further comprising a non-woven finishing step.

86. (Previously Presented) The process according to claim 60, further comprising a non-woven finishing step.

87. (Previously Presented) The process according to claim 53, further comprising a multicolor printing step of the non-woven.

88. (Previously Presented) The process according to claim 60, further comprising a multicolor printing step of the non-woven.

89. (Previously Presented) The process according to claim 54, wherein each preparation step of the polymer fibers and laying of the fibers of absorbent material is made on a support (S) having a surface comprising sections with a profile substantially perpendicular to the vertical laying flow of the fibers interspaced by sections with an inclined profile of 10.degree.-50.degree. in relation to said vertical flow.

90. (Previously Presented) The process according to claim 61, wherein each preparation step of the polymer fibers and laying of the fibers of absorbent material is made on a support (S) having a surface comprising sections with a profile substantially perpendicular to the vertical laying flow of the fibers interspaced by sections with an inclined profile of 10^0-50^0 in relation to said vertical flow.

91. (Previously Presented) A hydro-entangled single- or multi-layer non-woven produced by a process comprising the steps of:

preparing at least one layer (T_1) of splittable multi-component polymer fibers and at least one layer of cellulous pulp fibers (T_3); and

hydro-entangling said at least one layer of splittable multi-component polymer fibers and said at least one layer of cellulose pulp fibers (T_3) such as to obtain a non-woven where the multi-component polymer fibers are split into mono-component micro-fibers entangling one another, wherein the said at least one layer (T_1) of splittable multi-component polymer fibers has not been previously subjected to a bonding step.

92. (Previously Presented) A hydro-entangled single- or multi-layer non-woven produced by a process comprising the steps of:

preparing at least one layer (T_1) of exploded polymer fibers and at least one layer of cellulous pulp fibers (T_3); and

hydro-entangling said at least one layer of exploded polymer fibers and said at least one layer of cellulose pulp fibers (T_3) such as to obtain a non-woven where the multi-component polymer fibers are split into mono-component micro-fibers entangling one another, wherein the said at least one layer (T_1) of exploded polymer fibers has not been previously subjected to a bonding step.

93. (Previously Presented) The non-woven fabric according to claim 91, comprising at least one micro-fiber layer.

94. (Previously Presented) The non-woven fabric according to claim 92, comprising at least one micro-fiber layer.

95. (Previously Presented) The non-woven fabric according to claim 93, wherein said micro-fibers have a diameter of between 0.1 dTex and 0.9 dTex.

96. (Previously Presented) The non-woven according to claim 92, wherein said micro-fibers have a diameter of between 1 and 5 micron.

97. (Previously Presented) The non-woven according to claim 91, wherein the microfibers have a weight in grams per meter between 50 and 70, the tensile strength in the machine direction expressed in Newton per 5 cm (N/5 cm) is between 50 and 150, whereas in the cross-direction of between 20 and 75, the elongation calculated as a percentage in relation to the length in a relaxed state is between 35% and 85% in machine direction (MD), whereas it is between 70% and 100% in the cross-direction (CD), the final content of the cellulose pulp fiber is between 50% and 75% by weight of the total weight of the non-woven, the absorption power calculated as a percentage of the total weight of the weight of the dry non-woven is between 600% and 700%.

98. (Previously Presented) The non-woven according to claim 92, wherein the microfibers have a weight in grams per meter is between 50 and 70, the tensile strength in the machine direction expressed in Newton per 5 cm (N/5 cm) is between 50 and 150, whereas in the cross-direction of between 20 and 75, the elongation calculated as a percentage in relation to the length in a relaxed state is between 35% and 85% in machine direction (MD), whereas it is between 70% and 100% in the cross-direction (CD), the final content of the cellulose pulp fiber is between 50% and 75% by weight of the total weight of the non-woven, the absorption power calculated as a percentage of the total weight of the weight of the dry non-woven is between 600% and 700%.

99. (Previously Presented) The non-woven according to claim 91, wherein said non-woven is of a three-layer type having a total weight in grams of between 48 and 65, a weight

of the upper layer in grams per square meter of between 11 and 13, a weight of the inner layer of cellulose pulp fiber of between 26 and 39 grams per square meter, a weight of the lower layer in grams per square meter of between 11 and 13, a MD tensile strength of between 18 and 27 N/5 cm, a CD tensile strength of between 7 and 14 N/5 cm and a thickness of between 0.40 and 0.65 mm.

100. (Previously Presented) The non-woven according to claim 92, wherein said non-woven is of a three-layer type having a total weight in grams of between 48 and 65, a weight of the upper layer in grams per square meter of between 11 and 13, a weight of the inner layer of cellulose pulp fiber of between 26 and 39 grams per square meter, a weight of the lower layer in grams per square meter of between 11 and 13, a MD tensile strength of between 18 and 27 N/5 cm, a CD tensile strength of between 7 and 14 N/5 cm and a thickness of between 0.40 and 0.65 mm.

101. (Previously Presented) The use according to claim 100, wherein said multi-layer non-woven comprises one layer of absorbent material fibers between two layers of split or exploded multi-component polymer fibers.